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10/587,181	04/05/2007	Isao Shimokawa	NITT.0342	7270

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EXAMINER	
KELLEY, STEVEN SHAUN	
ART UNIT	PAPER NUMBER
2617	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/587,181	SHIMOKAWA ET AL.	
	Examiner	Art Unit	
	STEVEN KELLEY	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 April 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7-25-06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The language of claim 10 is confusing as it appears to have words missing from the claim.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1 and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by either one of U.S. Patent 6,804,532 to Moon et al. (hereinafter “Moon”) or U.S. Patent 6,801,777 to Rusch (hereinafter “Rusch”).

Regarding method claim 1, both Moon and Rusch teach methods (see claims) of selecting wireless communication protocols based on efficiency as recited. Regarding

apparatus claim 8, see Fig. 3 of Moon and Fig. 1 of Rusch, which contain the recited structures to select a communication protocol based on efficiency, as recited. It is noted that an "access point" in Rusch is interpreted to be a "base station" as recited.

5. Claims 1-5, 8-10 and 12-15 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent Pub. 2003/0022629 to Miyoshi et al. (hereinafter "Miyoshi").

If the different modes of communication (such as shown in Fig. 2) which include BPSK, QPSK, 16QAM and 64QAM, are interpreted to be "communication protocols" (as recited), these claims are anticipated by Miyoshi (see Fig. 3, which monitors efficiency of the communications).

6. Claims 1, 7, 12 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent Pub. 2003/0231586 to Chheda (hereinafter "Chheda").

Chheda teaches selecting protocols based on efficiency of code use and power requirements (see Abstract).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 2-6, 9-10 and 12-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Moon or Rausch in view of U.S. Patent Pub. 2003/0022629 to Miyoshi et al. (hereinafter "Miyoshi").

Regarding claim 2, which recites "wherein each of said node devices evaluates said efficiency of communication based on a retransmit count of transmission packets", although Moon and Rusch both select communication protocols based on bit error rate (which inherently includes a retransmit count, as explained in column 10, lines 8-12 of Moon), for completeness, Miyoshi is added to explicitly teach "retransmit count" as recited.

In an analogous art, Miyoshi teaches a wireless communication system which monitors channel conditions and may switch channels and modes of operation based on the detected conditions (see Abstract). Miyoshi explicitly teaches in sections [0060] to [0065] (and shows in Fig. 3) of counting retransmissions and comparing the number of retransmissions to a threshold number (step ST201) and updating a communication mode table based on the result of this comparison.

Therefore, as Miyoshi uses retransmission counts as an indication of communication mode efficiency, and as both Moon and Rusch switch communication protocols based on efficiency (using bit error rates, which are calculated using retransmit counts), it would have been obvious to one of ordinary skill in the art to modify either Moon or Rusch with the ability to switch communication protocols based

on retransmission counts as described in Miyoshi, as retransmission counts are a conventional way of determining efficiency.

Regarding claim 9, which recites "wherein said communication processing unit detects a retransmit count of transmission packets, and said wireless communication protocol selecting unit evaluates said efficiency of communication based on the retransmit count detected, and selects a wireless communication protocol to be used", see the rejection of claim 2 above.

Regarding claim 3, which recites "wherein said base station evaluates said efficiency of communication based on the number of node devices under management of the base station", see section [0093] of Miyoshi, which teaches that the base station receives transmissions form "N" number of mobile terminals, which reads on the recited "number of node devices".

Regarding claim 4, which recites "wherein said base station evaluates said efficiency of communication, using packet transmit counts from said plurality of node devices under management of the base station and receive counts of packets transmitted from the node devices", see error rate detection section 802 in Fig. 10 of Miyoshi. Although Miyoshi does not explicitly teach "receive counts" but teaches error rates (see section [0078], as both Moon and Rusch teach error rates, it is inherent that "receive counts" must be included in a rate calculation, which renders obvious (if not inherent) the feature of "receive counts".

Regarding claim 5, which recites "wherein said base station evaluates said efficiency of communication based on error rates for packets received from said plurality

of node devices", see error rate detection section 802 in Fig. 10 of Miyoshi, which "evaluates said efficiency of communication", as recited.

Regarding claim 6, which recites "further comprising a management server connected to said base station, wherein said management server evaluates said efficiency of communication based on the error rates for packets transmitted from said plurality of node devices and received by the base station or a combination of the packet transmit counts at the plurality of node devices under management of said base station and the receive counts of packets from the node devices at said base station", as Moon teaches the conventionality of having a "router" included in the mobile device and also teaches a higher level device connected to a base station (such as base station controller 16 and a mobile switching center 12) and Miyoshi teaches that both the mobile and base stations may include similar structures to calculate efficiency, it would have been obvious to one of ordinary skill in the art to modify the combination of Moon/Rusch with Miyoshi to perform the efficiency calculations in a server, as recited.

Regarding claim 10, which recites "wherein said wireless communication protocol selecting unit selects said wireless communication protocol based on information indicative wireless communication protocol switching received from said base station", see for example, "wireless connectivity assistant 112" of Rusch, "controller 124" in Moon, and "communication mode selector 503" in Fig. 11 of Miyoshi, all of which perform the recited function of selecting or switching protocols.

Regarding claim 12, which recites the same structures as recited in claim 8, both Moon and Rusch include a "wireless unit", a "communication processing unit" and a "wireless communication protocol selecting unit" (see Fig. 3 of Moon and Fig. 1 of Rusch) in a mobile device. The difference between Moon/Rusch and claim 12 is that the structures of Moon/Rusch are included in a mobile station, while the preamble of claim 12 recites that these structures are included in a "base station".

In an analogous art, Miyoshi teaches a base station (Fig. 10) which includes structures such as a "communication mode selector 602", which switches communication modes based on packet error rates and channel quality (see Fig. 3). Therefore, as Miyoshi teaches that these mode selecting structures are included in both a mobile station and a base station, it would have been obvious to one of ordinary skill to modify either one of Moon and Rusch to provide the recited structures in a base station, as is conventional.

Regarding claim 13, which recites "further comprising a database unit in which a table for evaluating said efficiency of communication is stored, said table correlating applicable wireless communication protocols and the number of node devices under management of the base station, wherein said communication processing unit detects the number of node devices under management of the base station, selects one of said wireless communication protocols based on said table and said detected number of node devices, and instructs said wireless communication protocol selecting unit to switch to the selected protocol", see for example, Fig. 10 of Miyoshi which includes "table rewriting section 803", "communication mode table 603", and "communication

mode selector 602" and Figs. 4A-4C of Miyoshi which shows rewriting table data relating to error rates (recited efficiency) and selecting the mode accordingly. Therefore it would have been obvious to one of ordinary skill in the art to modify either Moon or Rusch with the structures shown in Fig. 10 of Miyoshi, as it is conventional to store efficiency data in tables and to select modes of operation (protocols) based on the stored data.

Regarding claim 14, which recites "further comprising: a database unit in which a table correlating applicable wireless communication protocols and efficiency of communication is stored, wherein said wireless communication protocol selecting unit refers to said table and selects one of said wireless communication protocols based on the evaluation of efficiency of communication", see Fig. 10 of Miyoshi and the rejection of claim 13 above.

Regarding claim 15, which recites "wherein said communication processing unit evaluates said efficiency of communication based on receive counts of packets from said plurality of node devices at the base station and packet transmit counts from the plurality of node devices, notified from said plurality of node devices", see for example, "wireless connectivity assistant 112" of Rusch, "controller 124" in Moon, and "communication mode selector 602" in Fig. 10 of Miyoshi, all of which perform the recited function of evaluating efficiency of communication protocols. Although the references (Moon/Rusch and Miyoshi) do not explicitly teach "receive counts" but teaches error rates (see section [0078] of Miyoshi), and claims of both Moon and

Rusch, it is inherent that "receive counts" must be included in a rate calculation, which renders obvious (if not inherent) the feature of evaluating on "receive counts".

Regarding claim 16, which recites "further comprising: a communication interface for communicating with a management server, wherein the number of node devices under management of the base station or the receive counts of packets transmitted from said plurality of node devices and received by the base station and the packet transmit counts from the plurality of node devices, notified from said plurality of node devices, are notified to said management server through the communication interface, and said wireless communication protocol is selected based on information for wireless communication protocol switching notified from said management server", see the rejection of claim 6 above. Additionally, it would have been obvious to one of ordinary skill in the art to include a "communication interface" (in either Moon or Rusch as modified by Miyoshi) to allow communications between a base station and server, as is conventional.

Regarding claim 17, which recites "wherein information of said selected wireless communication protocol is transmitted as information for wireless communication protocol switching to said plurality of node devices", transmitting data or information via any type of protocol (in all of the references) will inherently "transmit information of the selected protocol" as recited. Additionally, if this recited feature is not found to be inherent, in view of the teachings of the references which include switching between communication protocols, it would have been obvious to transmit information relating to a communication protocol switch in order to alert node devices of the protocol, used as

it would not be beneficial (in view of transmission efficiency concerns) to switch protocols in the base station and not inform mobile devices of the protocol switch.

9. Claims 7 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moon or Rusch as applied to claims 1 and 8 above, and further in view of Chheda.

Regarding claims 7 and 11, which recite "wherein said efficiency of communication is the amount of data transfer per power consumption for communication at said node devices", although Rusch teaches in column 4, lines 50-54 that grater distances between devices require more transmitting power and may result in lower signal to noise ratio and higher bit-error rate", Moon and Rusch do not explicitly teach that the "efficiency of communication is the amount of data transfer per power consumption", as recited.

In an analogous art, Chheda teaches selecting protocols based on efficiency of code use and power requirements (see Abstract). Chheda teaches that if a high percentage of system power is in use the protocol may be switched to one which uses more codes but less power to transmit a given amount of data, which reads on the recited "efficiency of communication is the amount of data transfer per power consumption for communication at said node devices". Therefore, it would have been obvious to one of ordinary skill in the art to modify either Moon or Rusch with the ability to select a protocol based on an efficiency of power consumption (as taught by

Chheda), as it is conventionally known that power constraints may be a factor within a communication system and should be compensated for when needed.

10. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moon or Rusch in view of Miyoshi as applied to claim 12 above, and further in view of Chheda.

Regarding claim 18, which recites "wherein said efficiency of communication is the amount of data transfer per power consumption for communication at the node devices", although Rusch teaches in column 4, lines 50-54 that grater distances between devices require more transmitting power and may result in lower signal to noise ratio and higher bit-error rate", Moon, Rusch and Miyoshi do not explicitly teach that the "efficiency of communication is the amount of data transfer per power consumption", as recited.

In an analogous art, Chheda teaches selecting protocols based on efficiency of code use and power requirements (see Abstract). Chheda teaches that if a high percentage of system power is in use the protocol may be switched to one which uses more codes but less power to transmit a given amount of data, which reads on the recited "efficiency of communication is the amount of data transfer per power consumption for communication at said node devices". Therefore, it would have been obvious to one of ordinary skill in the art to modify either Moon or Rusch (as modified by

Miyoshi) with the ability to select a protocol based on an efficiency of power consumption (as taught by Chheda), as it is conventionally known that power constraints may be a factor within a communication system and should be compensated for when necessary.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Kelley whose telephone number is (571) 272-5652. The examiner can normally be reached on Monday-Friday, 9AM to 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid can be reached on (571) 272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SSK/

/Lester Kincaid/
Supervisory Patent Examiner, Art Unit 2617